Factors and Simplifying
Notes

Factors

Factors of 24	1 • 24 2 • 12 3 • 8 4 • 6	{ 1, 2, 3, 4, 6, 8, 12, 24 }
Factors of 5a	5 • a	{ 5, a }
Factors of $15x^2y$	3 • 5 • x^2 • y	{ 3, 5, x^2, y }

Common Factors

Example 1

Factors of 12 { 1, 2, 3, 4, 6, 12 }

Factors of 20 { 1, 2, 4, 5, 10, 20 }

GCF (greatest common factor) 4

Example 2

Factors of 15x { 1, 3 , 5, 15, x)

Factors of $24x^2$ { 1, 2, 3, 4, 6, 8, 12, 24, x }

GCF (greatest common factor) 3x

Example 3

Factors of $27x^3y^2$ { 1, 3, 9, 27, x^3, y^2 }

Factors of $36x^2y^4$ { 1, 2, 3, 4, 6, 9, 12, 18, 36, x^2, y^4 }

GCF (greatest common factor) $9x^2 y^2$

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Prime Numbers

~ A positive integer which is only divisible by one and itself

~ Which of the following are NOT 'prime numbers'

3 5 7 9 11 13 15 17 19 23 27 29

Composite Number

~ A positive integer greater than 1 with more than two factors

3 5 7 9 11 13 15 17 19 23 27 29

Exponents (positive and negative)

$2x^4 = 2 \bullet x \bullet x \bullet x \bullet x$

$3x^2y^3 = 3 \bullet x \bullet x \bullet y \bullet y \bullet y$

$m^{-2} = \frac{1}{m^2}$

$x^2 y^{-3} = \frac{x^2}{y^3}$

Simplifying Expressions

$5^2 \bullet 5^3 = 5 \bullet 5 \bullet 5 \bullet 5 \bullet 5 = 5^5$

~ can you think of a rule for multiplying with exponents when the bases (in this case 5) are the same ?